

**SOUTH**

**DAKOTA**



**2004 SOUTH DAKOTA BAITFISH  
HARVEST SUMMARY**

**South Dakota**  
**Department of**  
**Game, Fish and Parks**  
Wildlife Division  
Joe Foss Building  
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**Completion Report**  
**No. 05-19**

**SOUTH DAKOTA BAITFISH HARVEST SUMMARY**  
**January 1 – December 31, 2004**

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***Annual Report***

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## **PREFACE**

Information presented in this summary was collected from bait dealer report forms covering the period January 1, 2004 through December 31, 2004. Copies of this report and reference to the data can be made with permission from the author or Director of the Division of Wildlife, South Dakota Department of Game, Fish and Parks, 523 East Capitol, Pierre, South Dakota, 57501.

## EXECUTIVE SUMMARY

Baitfish harvest in South Dakota is important from a biological and economical perspective. Given the importance of baitfish to South Dakota it is beneficial to determine the extent of baitfish harvest from South Dakota waters. Baitfish dealers that request a baitfish license are required to submit a baitfish dealer report that details baitfish transactions the previous year. Information contained in this summary are extrapolated from the baitfish dealer reports submitted by baitfish dealers that were licensed during the baitfish season of 2004 (January 1 through December 31, 2004).

A total of 176 of the 215 licensed baitfish dealers returned baitfish dealer report forms for an overall-reporting rate of 81.9%. Baitfish harvest in South Dakota was comprised of fathead minnows *Pimephales promelas*, white sucker *Catostomus commersoni*, and golden shiner *Notemigonus crysoleucas*. Licensed baitfish dealers reportedly obtained a total of 245,253 gallons and sold 187,730 gallons of baitfish during 2004. The “sold to obtained” ratio was 0.7655 and many sales of baitfish were apparently not reported. Baitfish dealers reported that 187,154 gallons of baitfish were harvested from South Dakota waters. Waters accessible only via private land provided the majority (79.2%) of baitfish harvested from South Dakota waters. Fathead minnows comprised 99.7% of the total baitfish harvest during 2004 from South Dakota waters. The 2004 reported harvest of fathead minnows from public accessible waters was below the historic mean and similar to the harvest reported during 2003. In fact, the harvest of fathead minnows from public accessible waters has been relatively consistent at 40,000 gallons since 1998. Baitfish dealers reported harvesting fathead minnows from 14 counties in South Dakota with the greatest harvest occurring in Kingsbury County.

Export baitfish dealers reported purchasing 156,953 gallons of baitfish from resident wholesale dealers. The reported export of baitfish by export dealers represents approximately 64% of the total reported baitfish obtained by wholesale baitfish dealers. Over two-thirds of the baitfish exported from South Dakota by export baitfish dealers were destined for Minnesota (47.1%) and Wisconsin (24.0%). The economic valuation of baitfish harvest to the South Dakota economy was 3.1 million dollars.

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## INTRODUCTION

Baitfish harvest in South Dakota is important from a biological and economical perspective. In general, the harvest of baitfish may affect sport fisheries because many sport fish populations depend on baitfish for sustenance. In addition, the harvest of baitfish can affect other (non-fish) food chain members of prairie wetlands such as waterfowl through competition for similar prey (Duffy 1996).

Recently, the baitfish harvest in South Dakota has been mainly comprised of fathead minnows *Pimephales promelas* (Soupir 2003). Fathead minnows are the most common fish species present in prairie wetlands (Peterka 1989) and fathead minnows serve as an important prey for piscivorous fish of prairie lakes due to their apparent ubiquitous distribution and high abundance (Isaak et al. 1993; Sammons et al. 1994). Other baitfishes commonly utilized by baitfish dealers in South Dakota include white sucker *Catostomus commersoni* and golden shiner *Notemigonus crysoleucas*. Baitfish dealers typically report baitfish in three general categories that include minnows (fathead minnow), suckers or chubs (white suckers), and shiners (golden shiners).

Economically, the baitfish harvest is important to the South Dakota State economy and yielded a valuation of approximately 3.8 million dollars during the 2001 baitfish harvest season (Broughton and Potter 2002). Given the importance of baitfish to South Dakota it is beneficial to determine the extent of baitfish harvest from South Dakota waters. The objective of this summary is to provide a synthesis of the baitfish license transactions within and outside of South Dakota as reported by baitfish dealers. Information contained in this summary is beneficial to fisheries managers, fisheries biologists, as well as conservation officers in monitoring future baitfish harvest from public waters and in developing potential management direction.

## METHODS

Baitfish dealers that request a baitfish license are required to submit a baitfish dealer report that details baitfish transactions the previous year. The information included in this summary was extrapolated from baitfish dealer reports submitted by baitfish dealers that were licensed during the baitfish season of 2004 (January 1 through December 31, 2004). If a baitfish dealer that was licensed during the 2004 baitfish season did not seek to obtain a baitfish license for the 2005 baitfish season that licensed dealers 2004 baitfish transactions were excluded from this report.

Baitfish licenses are divided into five types based on the residence status of the dealer and the types of sales anticipated by the dealer (Table 1). Of special consideration is that nonresident wholesale and retail bait dealer licenses are available only if the home state of the licensee provides the same opportunity for South Dakota residents. All baitfish transactions were reported in U.S. gallons ( $\pm 1.0$  gallon).

Table 1. License information (types, privileges and associated fees), number of licenses issued, number of license holders that reported and the percent reporting rate (Percent) for South Dakota bait dealer licenses during 2004 (January 1 - December 31).

License type	License Information		N		Percent (%)
	Privileges	Fee (\$)	sold	reported	
Resident retail	May raise, trap, possess, buy and sell bait at retail. May not sell to wholesale, export or other retail dealer.	20	172	141	82.0
Resident wholesale	May raise, trap, buy, possess and sell bait to retail, wholesale or export dealers.	200	22	19	86.4
Export	May buy, possess and transport bait to other states for resale.	300	19	15	78.9
Nonresident wholesale	May transport bait into South Dakota and sell to retail, wholesale or export dealers.	400	2	1	50.0
Nonresident retail	May come from another state to buy, sell, possess and transport bait within South Dakota. May not sell to wholesale, export or other retail dealers.	40	0	0	---
Totals			215	176	81.9

## RESULTS AND DISCUSSION

During 2004, a total of 215 baitfish licenses were sold and were comprised mostly of resident retail licenses (80 percent; %), resident wholesale licenses (10%), and export licenses (9%) (Table 1). Overall, 176 (82.1%) of the 2004 licensed baitfish dealers reported. Resident wholesale dealers (86.4%), followed by export dealers (78.9%), and resident retail dealers (82.0%) demonstrated the highest reporting rate. Two nonresident wholesale dealers were licensed in 2004.

Licensed baitfish dealers reported obtaining 245,253 gallons and selling 187,730 gallons of baitfish during the 2004 baitfish season (Table 2). A “sold to obtained” ratio of 0.7655 indicates that approximately 24% (57,523 gallons) of the baitfish reportedly obtained by licensed baitfish dealers were either not reported as sold, not sold, or lost to mortality. Special consideration should be made when interpreting the results contained in this summary because many baitfish dealers failed to report the gallons of minnows sold. In fact, only 60% of the resident retail baitfish dealers reported any sales even though they obtained baitfish. An attempt was made to estimate the percentage of baitfish lost (difference between baitfish reported obtained and sold) from dealers that had reported; however, excluding baitfish dealers that did not report baitfish sold resulted in more baitfish sold than were reportedly obtained. Other attempts at determining the percentage of baitfish lost would result in unreasonable assumptions. Thus, due to the inconsistencies in reporting by baitfish dealers this summary will only include transactions that were directly reported by baitfish dealers. If desired, readers of this summary may assume that nearly 100% of the baitfish obtained eventually sold.

### *Baitfish Source Waters*

Baitfish dealers reported that 187,154 gallons of baitfish were harvested from South Dakota waters. Waters with private access provided 148,263 gallons of baitfish (79.2%). Conversely, waters with public access supplied just below 21% of the baitfish harvest (38,891 gallons). Fathead minnows comprised 99.6% of the total baitfish harvested from South Dakota waters. (Table 3). The harvest of fathead minnows from waters with public access declined during the late 1990's as water levels increased in northeastern South Dakota and inundated many private grounds. The general trend of decreased baitfish harvest from public accessible waters has remained relatively steady since 1998. In fact, the 2004 reported harvest of fathead minnows from these waters (38,716 gallons) was below the historic mean (54,989 gallons) and similar to the harvest of fathead minnow reported from 1998 through 2003 (Figure 1; Appendix 1) (Soupir 2003).

Table 2. Volume (gallons) of all baitfish combined (fathead minnows, white suckers, and shiners) obtained and sold as reported by South Dakota resident retail and resident wholesale baitfish dealers during 2004 (January 1 - December 31).

<i>Activity</i>	Retail		Wholesale		Combined	
<i>Source/Destination</i>	gallons	%	gallons	%	gallons	%
<b>All Baitfish Combined</b>						
<i>Harvested</i>	255	100.0	186,899	100.0	187,154	100.0
Public access	54	21.2	38,837	20.8	38,891	20.8
Private access	201	78.8	148,062	79.2	148,263	79.2
<i>Purchased</i>	17,988	100.0	40,111	100.0	58,099	100.0
Resident wholesale	16,715	92.9	38,729	96.6	55,444	95.4
Imported wholesale	1,273	7.1	1,382	3.4	2,655	4.6
<i>Total Obtained</i> <sup>1</sup>	18,243	---	227,010	---	245,253	---
<i>Sold</i> <sup>2</sup>	18,003	100.0	169,727	100.0	187,730	100.0
South Dakota <sup>2</sup>	18,003	100.0	55,946	33.0	73,949	39.4
Exported <sup>3</sup>	---	---	113,781	67.0	113,781	60.6
<i>Sold:Obtained Ratio</i>	0.9868	---	0.7476	---	0.7655	---

<sup>1</sup> Does not include baitfish obtained by resident wholesale from other resident wholesale.

<sup>2</sup> Does not include baitfish sold to resident wholesale from other resident wholesale.

<sup>3</sup> Retail license holders may not export, wholesale or sell live baitfish to other retail dealers. Includes baitfish sold to export dealers and retail dealers in neighboring states.

Table 3. Volume (gallons) of fathead minnows (fathead), suckers (sucker), and shiners (shiner) obtained and sold as reported by South Dakota resident retail and resident wholesale baitfish dealers during 2004 (January 1 - December 31).

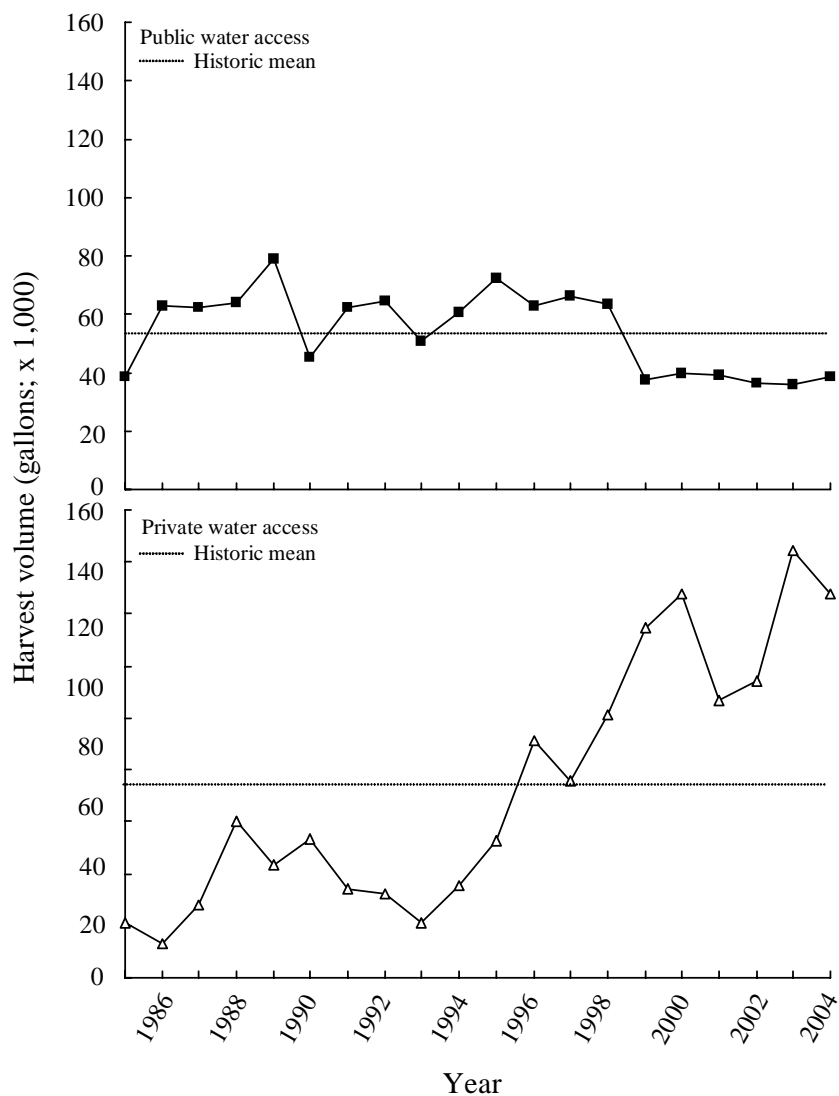
<i>Activity</i>	Retail		Wholesale		Combined	
<i>Source/Destination</i>	gallons	%	gallons	%	gallons	%
<b>Fathead</b>						
<i>Harvested</i>	161	100.0	186,356	100.0	186,517	100.0
Public access	46	28.6	38,670	20.8	38,716	20.8
Private access	115	71.4	147,686	79.2	147,801	79.2
<i>Purchased</i>	16,814	100.0	37,669	100.0	54,483	100.0
Resident wholesale	15,589	92.7	37,669	100.0	53,258	97.8
Imported wholesale	1,225	7.3	0	0	1,225	2.2
<i>Total Obtained</i> <sup>1</sup>	16,975	---	224,025	---	241,000	---
<i>Sold</i> <sup>2</sup>	16,882	100.0	167,341	100.0	184,223	100.0
South Dakota <sup>2</sup>	16,882	100.0	53,859	32.2	70,741	38.4
Exported <sup>3</sup>	---	---	113,482	67.8	113,487	61.6
<i>Sold:Obtained Ratio</i>	0.9945	---	0.7470	---	0.7644	---
<b>Sucker/Shiner</b>						
<i>Harvested</i>	94	100.0	543	100.0	637	100.0
Public access	8	8.5	167	30.8	175	27.5
Private access	86	91.5	376	69.2	462	72.5
<i>Purchased</i>	1,174	100.0	2,442	100.0	3,616	100.0
Resident wholesale	1,126	95.9	1,060	43.4	2,186	60.5
Imported wholesale	48	4.1	1,382	56.6	1,430	39.5
<i>Total Obtained</i> <sup>1</sup>	1,268	---	2,985	---	4,253	---
<i>Sold</i> <sup>2</sup>	1,121	100.0	2,386	100.0	3,507	100.0
South Dakota <sup>2</sup>	1,121	100.0	2,087	87.5	3,208	91.5
Exported <sup>3</sup>	---	---	299	12.5	299	8.5
<i>Sold:Obtained Ratio</i>	0.6221	---	0.7993	---	0.8246	---

<sup>1</sup> Does not include baitfish obtained by resident wholesale from other resident wholesale.

<sup>2</sup> Does not include baitfish sold to resident wholesale from other resident wholesale.

<sup>3</sup> Retail license holders may not export, wholesale or sell live baitfish to other retail dealers. Includes baitfish sold to export dealers and retail dealers in neighboring states.

Figure 1. Volume (gallons) of fathead minnows reported as harvested from waters with public and private access in South Dakota, and the historic mean during the years 1985 through 2004 (January 1 – December 31).



Baitfish dealers reported harvesting fathead minnows from 14 counties in South Dakota. Kingsbury County yielded the greatest proportion of fathead minnows harvested from public waters followed by Clark County, Charles Mix County, and Lake County (Figure 2). Baitfish imported from other states (2,655 gallons) represented below 2% of the total baitfish obtained by licensed baitfish dealers.

#### *Resident Retail Dealers*

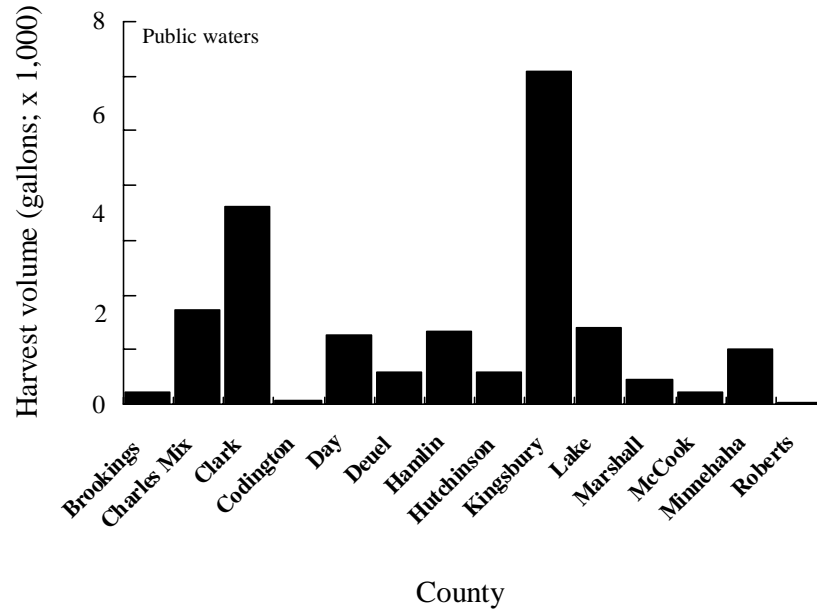
Resident retail dealers reported obtaining 18,243 gallons and selling 18,003 gallons of baitfish during 2004 (Table 2; Table 3). The “sold to obtained” ratio was 0.9868 indicating that nearly 99% of the baitfish obtained were reported sold. Resident retail dealers relied heavily on wholesale dealers for baitfish and directly harvested only 255 gallons (1.4% of total obtained) of baitfish from South Dakota waters. A total of 16,715 gallons of the baitfish obtained by retail baitfish dealers were purchased from resident wholesale dealers (91.6%) or imported from non-resident wholesale dealers (8.4%).

Comparison among baitfish types indicated that resident retail baitfish dealers obtained mostly fathead minnows (16,975 gallons) and that other baitfish (1,268 gallons) comprised a low proportion of the baitfish obtained. Approximately 29% of the fathead minnows harvested by resident retail baitfish dealers were harvested from public waters. Conversely, resident retail baitfish dealers harvested few baitfish other than fathead minnows from public waters. Resident retail baitfish licenses do not permit the export of baitfish outside South Dakota; therefore, all baitfish sold (18,003 gallons) by resident retail baitfish dealers were sold in South Dakota.

#### *Resident Wholesale Dealers*

Resident wholesale dealers reported obtaining 227,010 gallons and selling 169,727 gallons of baitfish during 2004 (Table 2; Table 3). The “sold to obtained” ratio was 0.7476 indicating that over 25% of the baitfish obtained were either not reported sold, not sold, or lost to mortality. Resident wholesale dealers reported harvesting 186,899 gallons of baitfish from South Dakota waters. A total of 38,729 gallons (17.1%) of the baitfish obtained by resident wholesale baitfish dealers were obtained as inter-dealer transactions. Only 1,382 gallons of baitfish were imported from non-resident wholesale dealers indicating that resident wholesale baitfish dealers are largely obtaining baitfish from within South Dakota. Most baitfish sold in South Dakota originated from within South Dakota considering that 91% of the baitfish obtained by resident retail baitfish dealers were derived from resident wholesale baitfish dealers.

Figure 2. Volume (gallons) of fathead minnows reported as harvested from waters with public access in South Dakota by county during 2004 (January 1 – December 31).





Comparison among baitfish types indicated that resident wholesale baitfish dealers obtained mostly fathead minnows (230,685 gallons) and that other baitfish comprised a low proportion of the baitfish obtained. Approximately 19.0% of the fathead minnows harvested by resident wholesale baitfish dealers were harvested from waters with public access. Similarly, resident wholesale baitfish dealers harvested nearly 31.0% of baitfish other than fathead minnows from waters with public access. Sales reported by resident wholesale baitfish dealers indicated that 113,781 gallons (67.0%) of the baitfish sold were exported outside of South Dakota.

#### *Export Dealers*

Export baitfish dealers reported purchasing 156,953 gallons of baitfish from resident wholesale dealers and transporting the baitfish outside South Dakota's borders. However, resident wholesale dealers reported exporting only 113,781 gallons of baitfish; therefore, some transactions between wholesale baitfish dealers and export baitfish dealers were apparently not reported by wholesale dealers. The reported export of baitfish by export dealers represents approximately 69% of the total reported baitfish obtained by wholesale baitfish dealers. Export of baitfish out of South Dakota was generally to retail outlets, private hatcheries and public hatcheries in surrounding states. Nearly two-thirds of the baitfish exported from South Dakota by export baitfish dealers were destined for Minnesota (73,861; 47.1%) and Wisconsin (37,684; 24.0%) (Table 3).

#### *Economic Value*

The value of baitfish harvest to the South Dakota economy during 2004 based on the actual reported sales by baitfish dealers was nearly 3.2 million dollars. (Table 4). As reported previously, many baitfish dealers did not report any sales of baitfish even though they reported obtaining baitfish. Broughton and Potter (2002) estimated losses of near 4% by baitfish dealers, which indicates that most baitfish obtained are in fact sold.

## **RECOMMENDATIONS**

Changes to the bait report forms were implemented in 2004 and likely limited confusion due to verbiage. However, a field seeking a general cost/gallon of baitfish for each category to various vendor types would assist in developing an economic valuation of the baitfish industry in South Dakota.

Table 4. States of destination and the volume (gallons) of fathead minnows (fathead), suckers (sucker), and shiner minnows (shiner) exported from South Dakota as reported by South Dakota export baitfish dealers during 2004 (January 1 - December 31).

Activity State	N	Volume (gallons)			Combined
		Fathead	Sucker	Shiner	
Florida	1	6,746	0	0	6,746
Iowa	1	8,145	0	0	8,145
Illinois	1	9,575	0	0	9,575
Kansas	1	3,579	0	0	3,579
Minnesota	7	73,861	0	0	73,861
Missouri	1	1,150	0	0	1,150
Nebraska	2	1,035	0	0	1,035
Tennessee	1	15,218	0	0	15,218
Wisconsin	4	37,684	0	0	37,684
Totals	19	156,953	0	0	156,953

Table 5. Estimated economic value of the fathead minnow harvest to the South Dakota economy during 2004 (January 1 - December 31). Note: reported values are based on the actual sales transactions reported by baitfish dealers. Based on estimated rates reported by Broughton and Potter, 2002.

<i>Seller Type</i>		Dollars (\$)	
Purchaser	Gallons Sold	Rate	Value
	<b>Reported</b>		
<i>Retail</i>	16,882	70.00	1,181,740
<i>Wholesale</i>			
Retail	53,859	13.00	700,167
Wholesale	37,669	8.50	320,186
Exported	113,482	8.50	964,597
<i>Total Reported</i>	221,892	---	3,166,690

Appendix 1. Volume (gallons) of fathead minnows reported as harvested from waters with public or private access in South Dakota, and the number of wholesale and retail licenses permitted during the years 1985 though 2004.

Year	Source			Licenses Issued	
	Public	Private	Combined	Retail	Wholesale
1985	38,476	21,171	59,647	---	---
1986	62,678	13,047	75,725	162	13
1987	62,306	28,133	90,439	178	14
1988	64,154	60,334	124,488	191	13
1989	78,653	43,614	122,267	195	17
1990	45,363	53,601	98,964	166	22
1991	62,604	34,163	96,767	155	21
1992	64,820	32,009	96,829	158	20
1993	50,814	21,392	72,206	152	18
1994	60,865	35,472	96,337	150	20
1995	72,247	53,004	125,251	140	17
1996	63,003	91,442	154,445	147	20
1997	66,024	75,441	141,465	149	20
1998	63,396	100,995	164,391	171	19
1999	37,442	134,563	172,005	197	24
2000	39,615	147,653	187,268	205	25
2001	39,362	106,921	146,283	175	22
2002	36,229	113,981	150,210	192	22
2003	35,784	164,481	200,264	175	22
2004	38,716	147,801	186,517	172	22
Mean	54,127	73,961	128,088	170	19

Appendix 2. Public accessible waters or public areas reported as sources of fathead minnows and the volume (Gallons) reported harvested by licensed baitfish dealers during 2004 (January 1 – December 31). All information is in “as-reported” form.

County	Reported Source	Gallons
Brookings	---	482
Charles Mix	Lake Andes	3,420
Clark	Christopherson	3,177
Clark	Cherry	1,572
Clark	Willow Lake	2,158
Clark	Antelope	211
Clark	Casey	95
Codington	Dry	50
Codington	Tinkertown	112
Day	Sweetwater	578
Day	Lonesome	1,763
Deuel	Francis	547
Deuel	Lone Tree	618
Hamlin	Five Ponds	2,682
Hutchinson	Silver	1,150
Kingsbury	East Spring	6,329
Kingsbury	Preston	5,830
Lake	Tietgen	2,800
Marshall	Horseshoe	305
Marshall	Chokecherry	339
Marshall	Dumarce	100
Marshall	Piyas	185
Marshall	Turtlefoot	200
Minnehaha	Clear	2,000
McCook	Lehrman	480
Roberts	Drywood	75
Total		37,258

--- Unreported or unknown.

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